

CLAIMS

We claim:

1. A composition of matter comprising a solid support and a self-assembled monolayer of linear peptides wherein said peptides bound directly to said solid support through a terminal amino acid in a predetermined pattern.
2. The composition of matter according to Claim 1 wherein said solid support is a metal.
3. The composition of matter according to Claim 2 wherein said metal is selected from the group consisting of gold, copper, nickel, zinc and silver.
4. The composition of matter according to Claim 1 wherein said solid support is selected from the group consisting of silica and glass.
5. The composition of matter according to Claim 1 wherein said solid support has two or more different peptides bonded thereon.
6. The composition of matter according to Claim 1 wherein said peptide comprises a terminal reactive group, a central linker and a presenting group.
7. The composition of matter according to Claim 6 wherein the peptides are extended beta strands.
8. The composition of matter according to Claim 6 wherein said terminal reactive group is a functional group pendant from a side chain, the amino or the

carboxy group of the terminal amino acid of the peptide.

9. The composition of matter according to Claim 8 wherein the terminal reactive group is selected from the group consisting of a hydroxy, thiol, carboxy, amino, amido, imide or guanidino group.

10. The composition of matter according to Claim 9 wherein the peptide comprises a terminal amino acid selected from the group consisting of serine, cysteine, tyrosine, asparagine, glutamine, aspartic acid, glutamic acid, lysine, histidine and arginine.

11. The composition of matter according to Claim 10 wherein said terminal amino acid is selected from serine or cysteine.

12. The composition of matter according to Claim 10 wherein said central linker comprises between about 2 to about 50 amino acids.

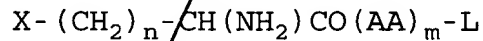
13. The composition of matter according to Claim 12 wherein said central linker is selected from the group consisting of a oligoglycine or oligoalanine.

14. The composition of matter according to Claim 13 wherein said presenting moiety is a peptide that possesses an affinity to a target molecule.

15. The composition of matter according to Claim 14 wherein the target molecule is a cell surface protein and the presenting group is selected from the group consisting of a ligand, an antibody or an antibody

fragment which binds specifically to the cell surface protein.

- 5 16. A composition of matter comprising a solid support and a self-assembled monolayer of linear peptides wherein said peptides bound directly to said solid support through a terminal amino acid in a predetermined pattern, the peptide further being characterized by the formula:



or



wherein X is H, alkyl, alkoxy, alkylthio or dialkylamine, thiol, hydroxy, amino or carboxy; AA is, independently, the same or different, naturally-occurring or non-naturally-occurring amino acid;

L is a group which binds specifically or non-specifically to a target;

n is zero or an integer between 1 to about 5; and

m is an integer of at least about 2.

17. A self-assembled monolayer of a chemical reactive moiety on a solid support, the improvement comprising linking said chemical reactive moiety to said solid support through one or more peptide linkages.

- 25 18. A method for manufacturing a composition of matter comprising a solid support and a self-assembled monolayer of linear peptides wherein said peptides bound directly to said solid support through a terminal amino acid in a predetermined pattern comprising the steps:
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- (a) contacting an elastomeric stamp characterized by a relief of said predetermined pattern with a solution containing a compound which can react with said solid support;
 - (b) contacting said stamp with a surface of said solid support under conditions suitable for the reaction between said compound and said solid surface, wherein said compound reacts with said solid support at points of contact between said stamp and said solid support, corresponding to the relief of said predetermined pattern;
 - (c) removing said stamp; and
 - (d) contacting said solid support with a solution containing said linear peptides under conditions suitable for the reaction of said peptide and said solid support.

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19. A method for manufacturing a composition of matter comprising a solid support and a self-assembled monolayer of linear peptides wherein said peptides bound directly to said solid support through a terminal amino acid in a predetermined pattern comprising the steps:

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- (a) contacting an elastomeric stamp characterized by a relief of said predetermined pattern with a solution containing said linear peptide;
 - (b) contacting said stamp with a surface of said solid support under conditions suitable for the reaction between said linear peptide and said solid surface, wherein said linear peptide reacts with said solid support at points of contact between said stamp and said solid support, corresponding to the predetermined pattern; and
 - (c) removing said stamp.

20. A method for culturing cells on a composition of matter comprising a solid support and a self-assembled monolayer of linear peptides wherein said peptides bound directly to said solid support through a terminal amino acid in a predetermined pattern comprising the steps of:
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- (a) contacting said cells with the composition of matter under conditions suitable for said cells to bind to the linear peptides; and
- 10 (b) maintaining said cells under conditions suitable for growth.
21. A method for assaying the presence of a target in a sample comprising the steps of:
- 15 (a) contacting said sample with a composition of matter comprising a solid support and a self-assembled monolayer of linear peptides wherein said peptides bound directly to said solid support through a terminal amino acid in a predetermined pattern and said linear peptides possess an affinity for said target; and
- 20 (b) detecting the presence of said target on said composition of matter.

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